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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,804	07/30/2003	Akihiro Takamura	520.42834X00	9485

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EXAMINER
WHIPPLE, BRIAN P

ART UNIT	PAPER NUMBER
2152	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)
	10/629,804	TAKAMURA ET AL.
	Examiner	Art Unit
	Brian P. Whipple	2152

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 July 2003*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some *   c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date *7/30/03*.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1-8 are pending in this application and presented for examination.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

3.   Claims 6-7 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

4.   As to claim 6, the meaning of "reading/writing from/to" is unclear. The phrase

could represent and, or, or and/or. The examiner treated the phrase as "reading to and

writing from" for the purposes of examination.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 1-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Crossley, U.S. Patent No. 4,780,821, in view of Brice, Jr. et al. (Brice), U.S. Patent

No. 5,414,851.

7.   As to claim 1, Crossley discloses a computer system having a virtualized I/O

device, comprising:

a client computer having a first hypervisor; a first OS operating on the first

hypervisor; and a resource (Abstract, ln. 8-16; Col. 5, ln. 8-12); and

a server computer having a second hypervisor and a second OS operating on

the second hypervisor (Abstract, ln. 8-16; Col. 5, ln. 8-12);

said client computer and said server computer are connected via a network (Col.

3, ln. 25-27);

said first hypervisor comprises:

logical I/O device access detecting means for detecting a logical I/O device.

access, which is directed to said resource of said server computer (Col. 6, ln. 63 – Col.

7, ln. 4);

virtual I/O client processing for transmitting to said server computer, via said

network, a command to access said logical I/O device when said logical I/O device

access is detected (Col. 6, ln. 63 – Col. 7, ln. 4); and

said second hypervisor comprises virtual I/O server processing for receiving said

command via said network and for issuing a command to said resource (Col. 6, ln. 48 –

Col. 7, ln. 4).

Crossley discloses sharing resources across a plurality of computers using hypervisors as discussed above. Additionally, Crossley discloses that server systems sharing printers, which are physical I/O devices, is well known in the art as cited in the background of the invention (Col. 2, ln. 62-64). However, it may be argued that Crossley's invention is directed solely to file resources and application programs in the disclosure of the embodiments and not physical I/O devices.

But it would have been obvious to one of ordinary skill in the art at the time of the invention to extend the teachings of Crossley to physical I/O devices. If the background of the invention alone does not lead one to this conclusion, then additional evidence of this can be found in Brice, which does disclose sharing a physical I/O device (Col. 1, ln. 68 – Col. 2, ln. 3; Col. 2, ln. 26-34).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Crossley by explicitly including physical devices as shared resources as taught by Brice in order to extend the benefits of sharing resources (Crossley – Col. 3, ln. 25-27) to physical devices (Brice – Col. 6, ln. 28-34).

The rationale for this motivation is applied to all dependent claims where appropriate.

8.   As to claim 2, Crossley and Brice disclose the invention substantially as in parent claim 1, including communication between said client computer and said server computer is performed on a protocol, which is determined by said first and second hypervisors (Crossley – Col. 3, ln. 47-52).

9.   As to claim 3, Crossley and Brice disclose the invention substantially as in parent

claim 1, including communication between said client computer and said server

computer is performed on a protocol of said second OS, which operates on said server

computer (Crossley – Col. 3, ln. 47-52; Col. 6, ln. 53-57).

10.   As to claim 4, Crossley and Brice disclose the invention substantially as in parent

claim 1, including said virtualized I/O client processing transmits to said server computer

said command to access said logical I/O device, after converting said command into a

protocol, which the second OS of said server computer is capable of interpreting

(Crossley – Col. 3, ln. 47-52; Col. 6, ln. 63 – Col. 7, ln. 4).

11.   As to claim 5, Crossley and Brice disclose the invention substantially as in parent

claim 1, including said client computer has a memory protection control function

(Crossley – Col. 9, ln. 58 – Col. 10, ln. 2) and further has means for detecting a read

and a write command to said logical I/O device by use of said memory protection control

function, and for passing control to said first hypervisor (Crossley – Col. 4, ln. 45-48 and

51-55; Col. 6, ln. 63 – Col. 7, ln. 4).

12.   As to claim 6, Crossley and Brice disclose the invention substantially as in parent

claim 5, including said client computer, upon reading/writing from/to a particular memory

address, a memory protection interrupt occurs (Crossley – Col. 9, ln. 58 – Col. 10, ln.

37), and when a cause of said memory protection interrupt is either a read command

issuance or a write command issuance to said logical I/O device, said virtual I/O client

processing is called (Crossley – Col. 4, ln. 45-48 and 51-55; Col. 6, ln. 63 – Col. 7, ln. 4;

Col. 9, ln. 58 – Col. 10, ln. 37).

13.   As to claim 8, Crossley and Brice disclose the invention substantially as in parent

claim 1, including said virtual I/O client processing comprises:

        means for determining whether data written in a memory address for controlling

an I/O device is a read command or a write command (Crossley – Col. 10, ln. 44 – Col.

11, ln. 2);

        means for, when the data is a read command, transmitting to said server

computer the read command and a parameter of the read command (Crossley – Col. 4,

ln. 51-55; Col. 6, ln. 63 – Col. 7, ln. 4);

        means for receiving data read out in I/O read processing by said server computer

(Crossley – Col. 3, ln. 47-57);

        means for, when the data is a write command, transmitting to said server

computer the write command and a parameter of the write command Crossley – Col. 4,

ln. 51-55; Col. 6, ln. 63 – Col. 7, ln. 4); and

        means for transmitting data to be written to said server computer (Crossley – Col.

4, ln. 51-55; Col. 6, ln. 63 – Col. 7, ln. 4).

14.   Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crossley

and Brice as applied to claim 6 above, and further in view of Awasthi et al. (Awasthi),

U.S. Publication No. 2002/0083226 A1.

15.   As to claim 7, Crossley and Brice disclose the invention substantially as in parent

claim 6, including an I/O device which stores a file designated by an application

program (Crossley – Col. 51-55), but are silent on said first OS has means for searching

a device driver corresponding to an I/O device, and calling the device driver thus found

as a result of the searching, and said device driver issues a read command and writes

said read command in a memory address of the logical I/O device.

However, Awasthi does disclose said first OS has means for searching a device

driver corresponding to an I/O device, and calling the device driver thus found as a

result of the searching, and said device driver issues a read command and writes said

read command in a memory address of the logical I/O device (Abstract).

It would have been obvious to one of ordinary skill in the art at the time of the

invention to modify the teachings of Crossley and Brice by searching for and calling a

device driver as taught by Awasthi in order to configure and manage peripheral devices

(Awasthi – [0016]).

Conclusion

16.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. See the attached Notice of References Cited (PTO-892) for these
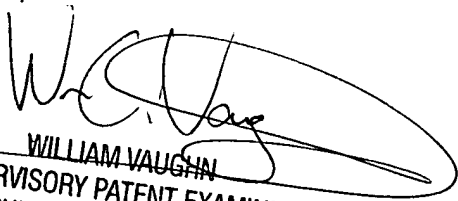
arts as well as the relied upon arts.

17.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Brian P. Whipple whose telephone number is (571) 270-

1244. The examiner can normally be reached on Mon-Fri (8:30 AM to 5:00 PM EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Bunjob Jaroenchonwanit can be reached on (571) 272-3913. The fax

phone number for the organization where this application or proceeding is assigned is

571-273-8300.

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system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BPW

Brian P. Whipple
4/16/07

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